

Exhibit 3 to Declaration of Julia A. Olson



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## **Climate Change Problem But Not Top Priority**

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# Climate change

## *Problem, but not top priority*

Bjørn Lomborg

[www.lomborg.com](http://www.lomborg.com)

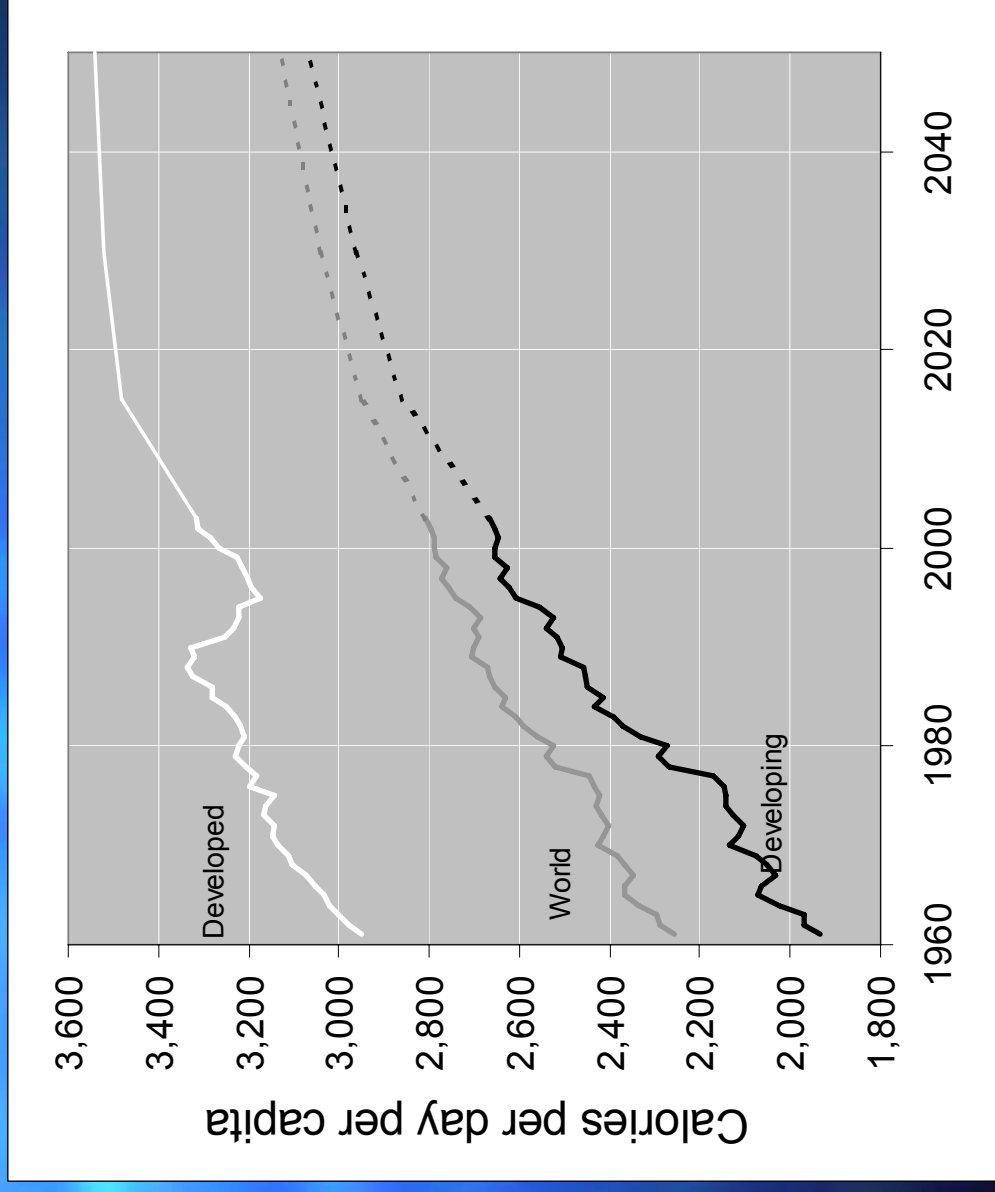
# Two important points

- Remove our myths
  - Domsday is not nigh
  - Thus, we don't have to act in desperation
- Essential information necessary to make the best possible decisions
  - There is only one bag of money but many good uses

# Are things really getting better?

- We have more leisure time, greater security and fewer accidents, more education, more amenities, higher incomes, fewer starving, more food and a healthier and longer life.
  - Both for the industrialized and developing world

# Calories for developed and developing countries, 1961-2050



FAO 2007



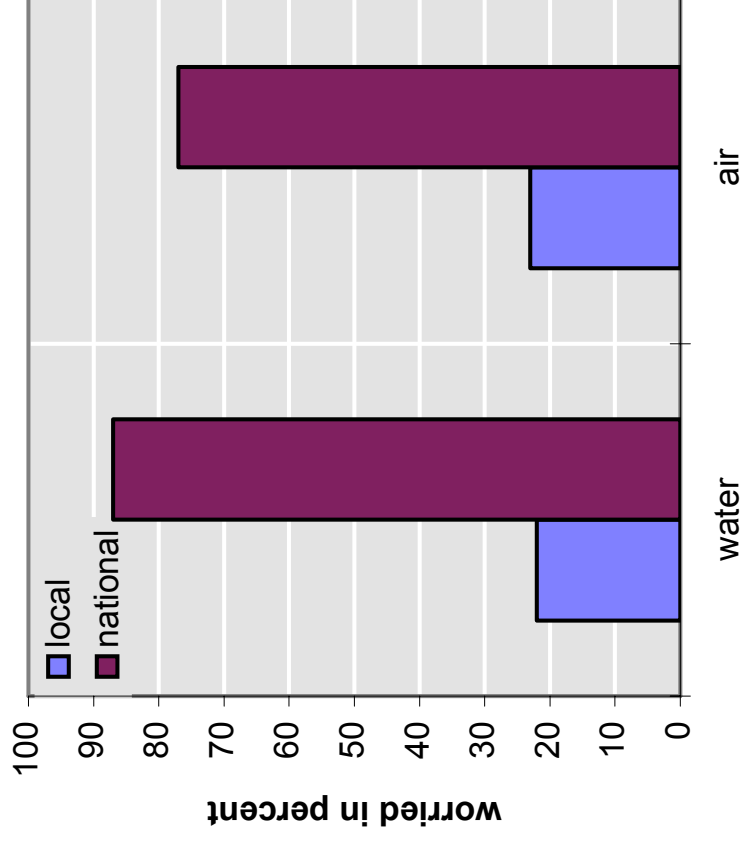
# Are things really getting better? II

- At the same time, the environmental load in many of the important areas has decreased:
  - air
  - water
- And in general we need to focus on the costs and advantages:
  - our chemical fears, e.g. pesticides
  - global warming



# We believe things are bad

- Where are we worried?



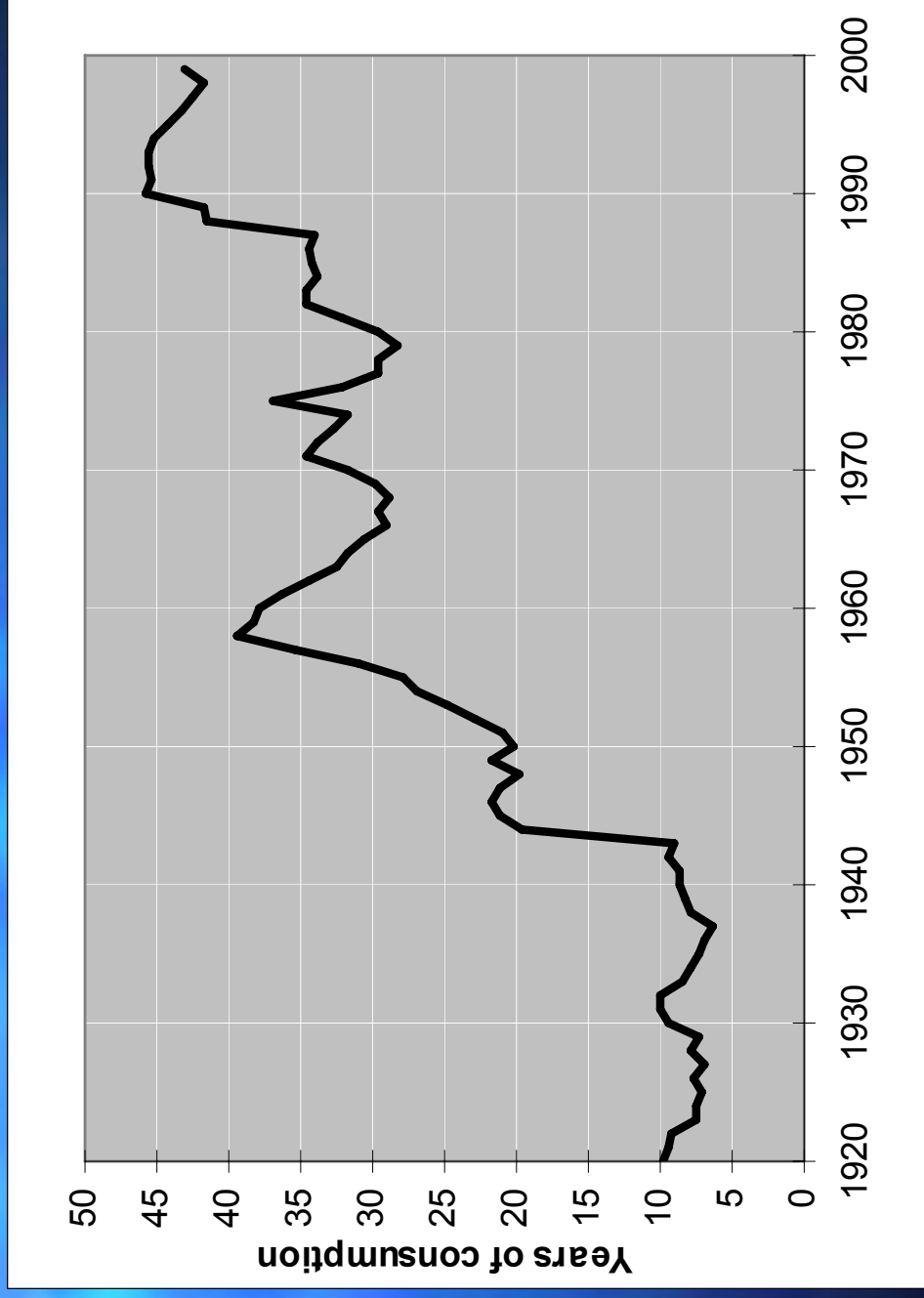
# Why so much bad news?

- Research
  - built-in bias
- Interest Organizations
  - argue for a specific case
- Media
  - single issue
  - bad news sells better

# Resources

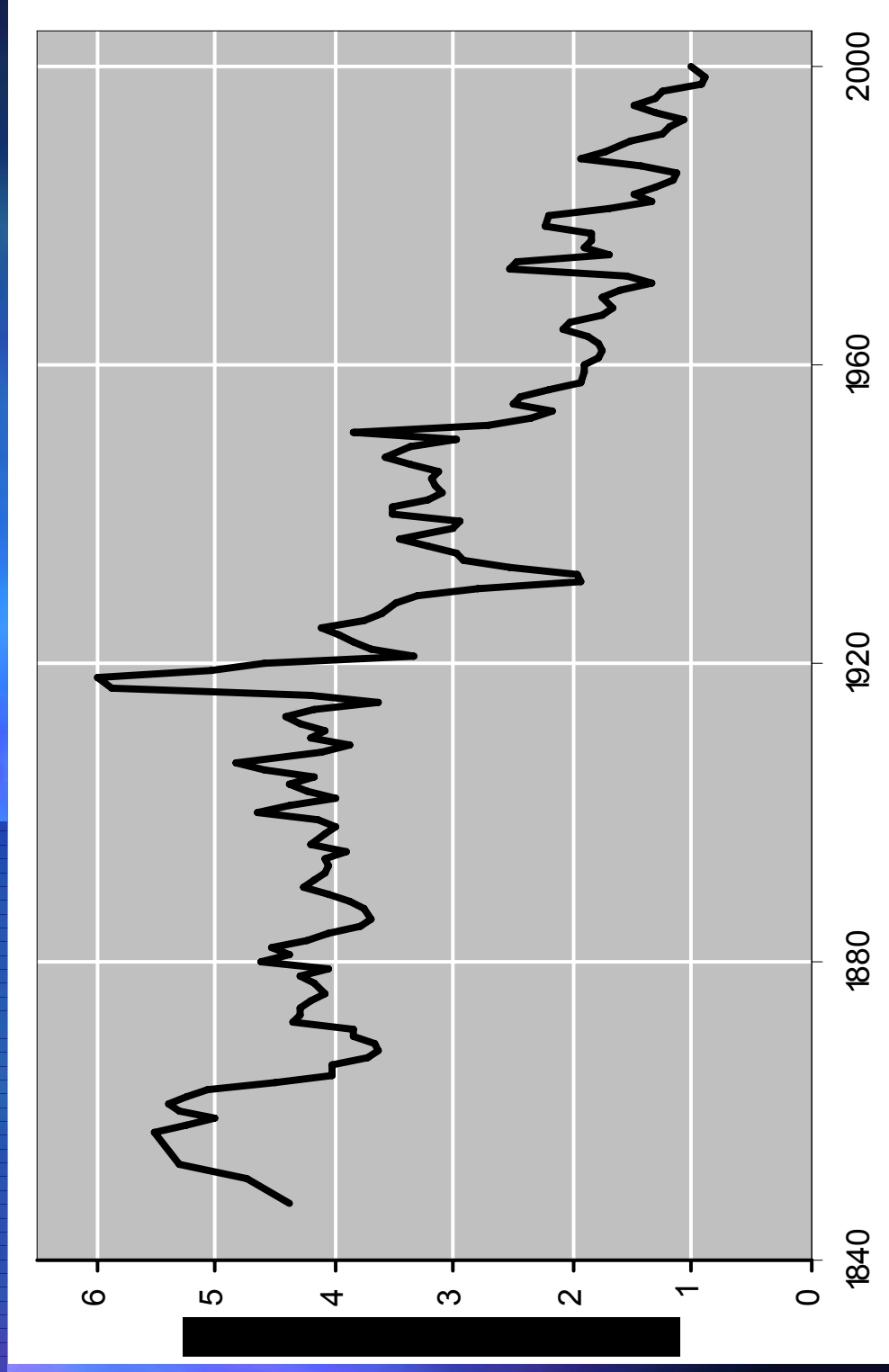
*- are there enough to support our future?*

# Oil, Consumption Time



*Simon et al. 1994 & EIA 1997, 1999, 2000*

# Prices on Raw Materials, 1845-2000



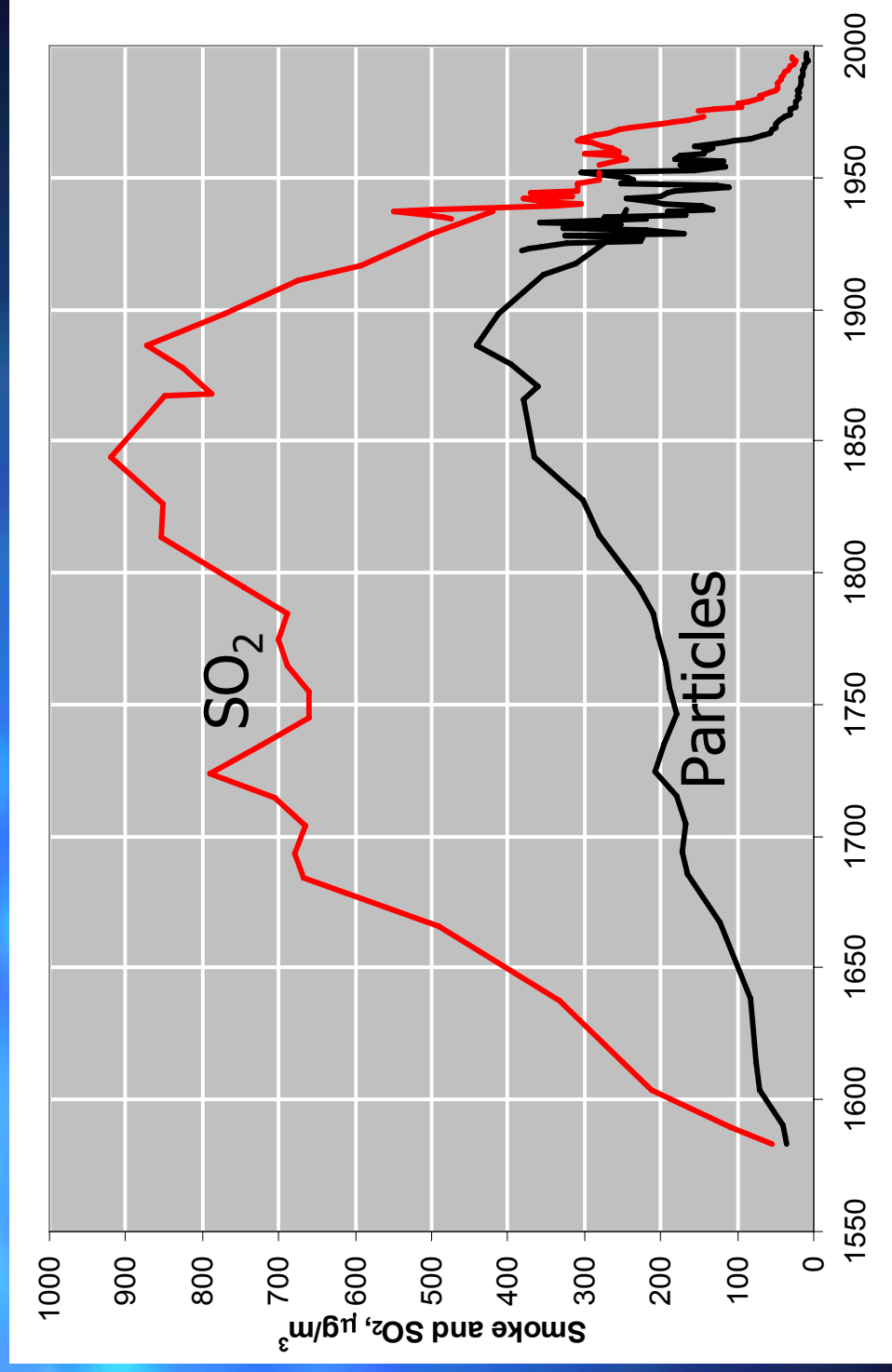
*Economist 2001*



# Pollution

- *are we undermining welfare?*

# Particles and SO<sub>2</sub> in London, 1585-1997

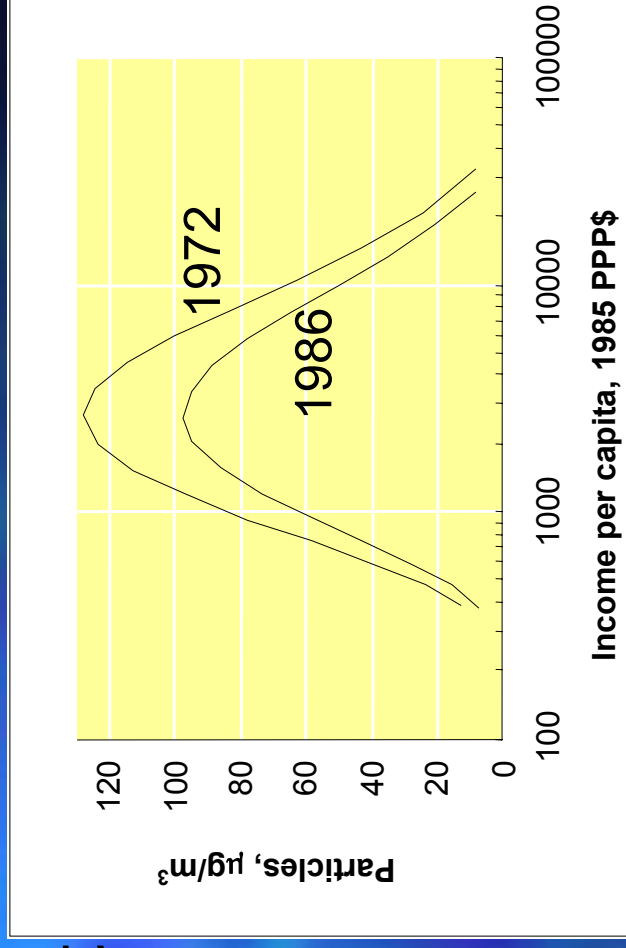


*Brimblecombe 1977, Laxen & Thomsen 1987, Elsom 1997, OECD 1999*



# And the developing world?

- Pollution has a tendency to get first worse with economic growth, then better
- Thus, *both* growth and environment



*World Bank 1992, Shafik 1994*

# Global warming

What to do?



# Four central points

- Global warming is real and man-made
  - UN/IPCC conclusion
- Consequences vastly exaggerated
  - E.g. Al Gore
- We need smarter solutions
  - Not “now or never” but “now or later”
- Climate change not the only problem
  - Many other, better solutions first

# 1

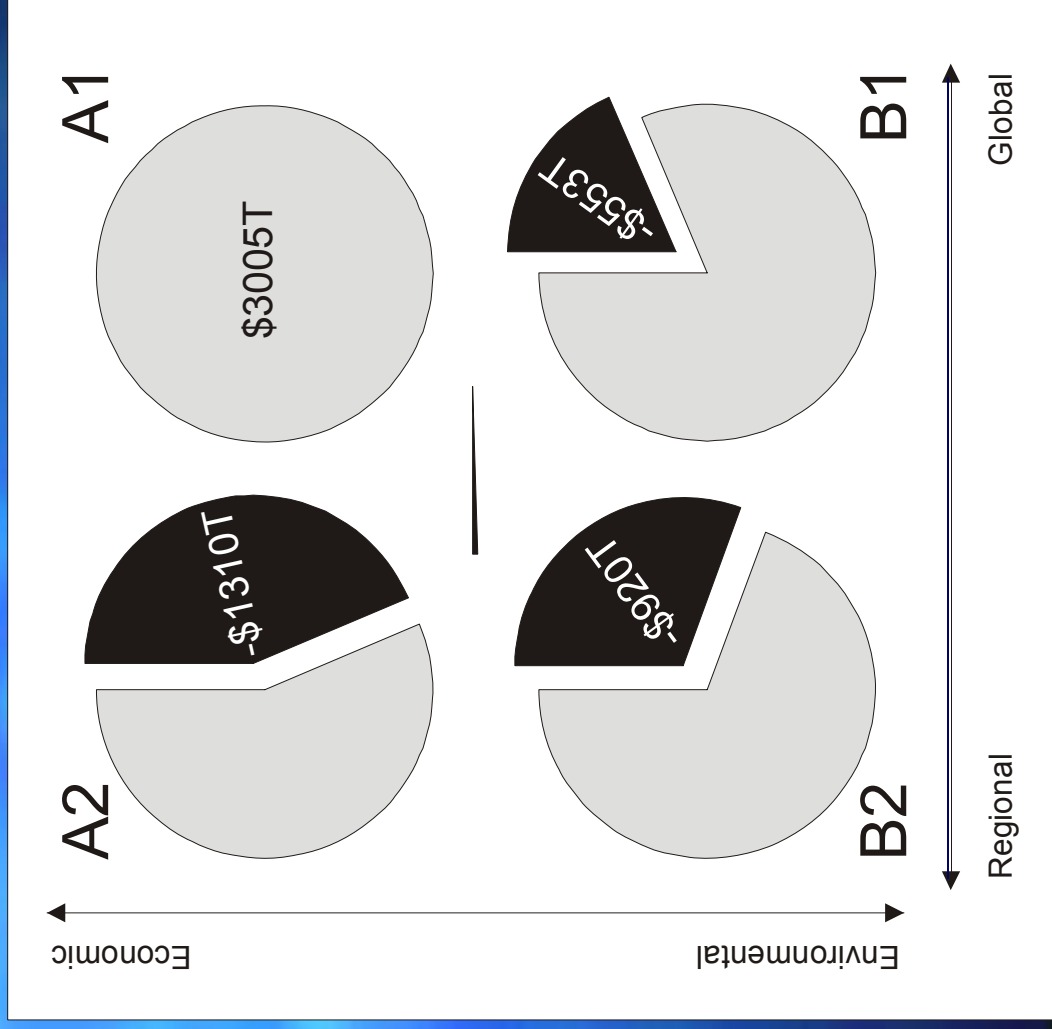
Global warming is real  
and man-made



# Climate change is real

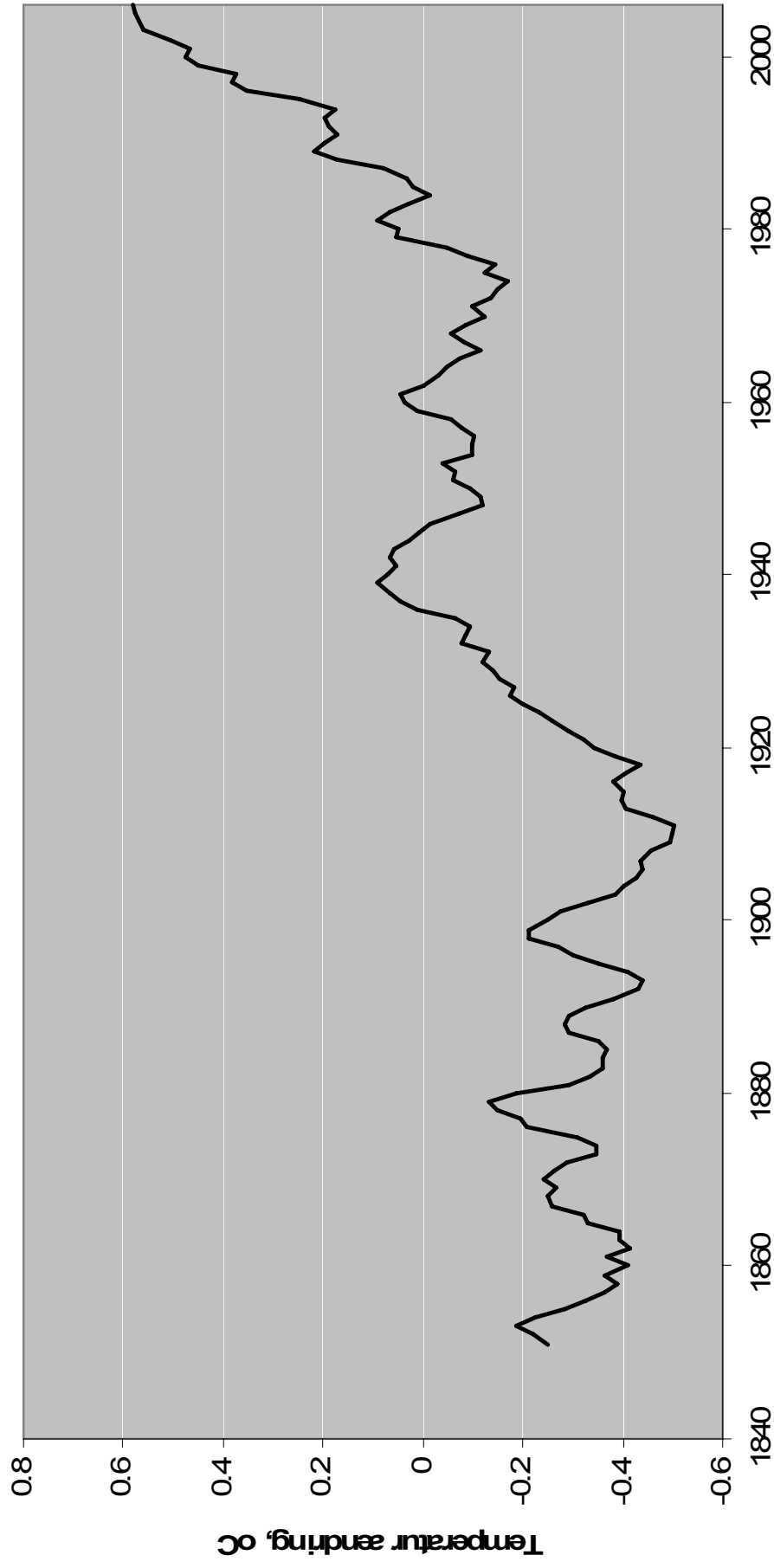
- On the agenda, thanks to Al Gore
- The best information from the UN Climate Panel, IPCC
- Likely temperature rise by 2100
  - 2.6°C (4.7°F)
- Total cost of \$15 trillion
  - 0.5% of 21<sup>st</sup> century \$3,000 trillion GDP
- Need *smart* strategy

# Global warming and other costs of the 21<sup>st</sup> century



IPCC 2000

# Global temperature 1856-2006



*Jones et al. 2007*



# 2

Consequences vastly exaggerated  
Leading to bad judgment

# Al Gore and the standard story

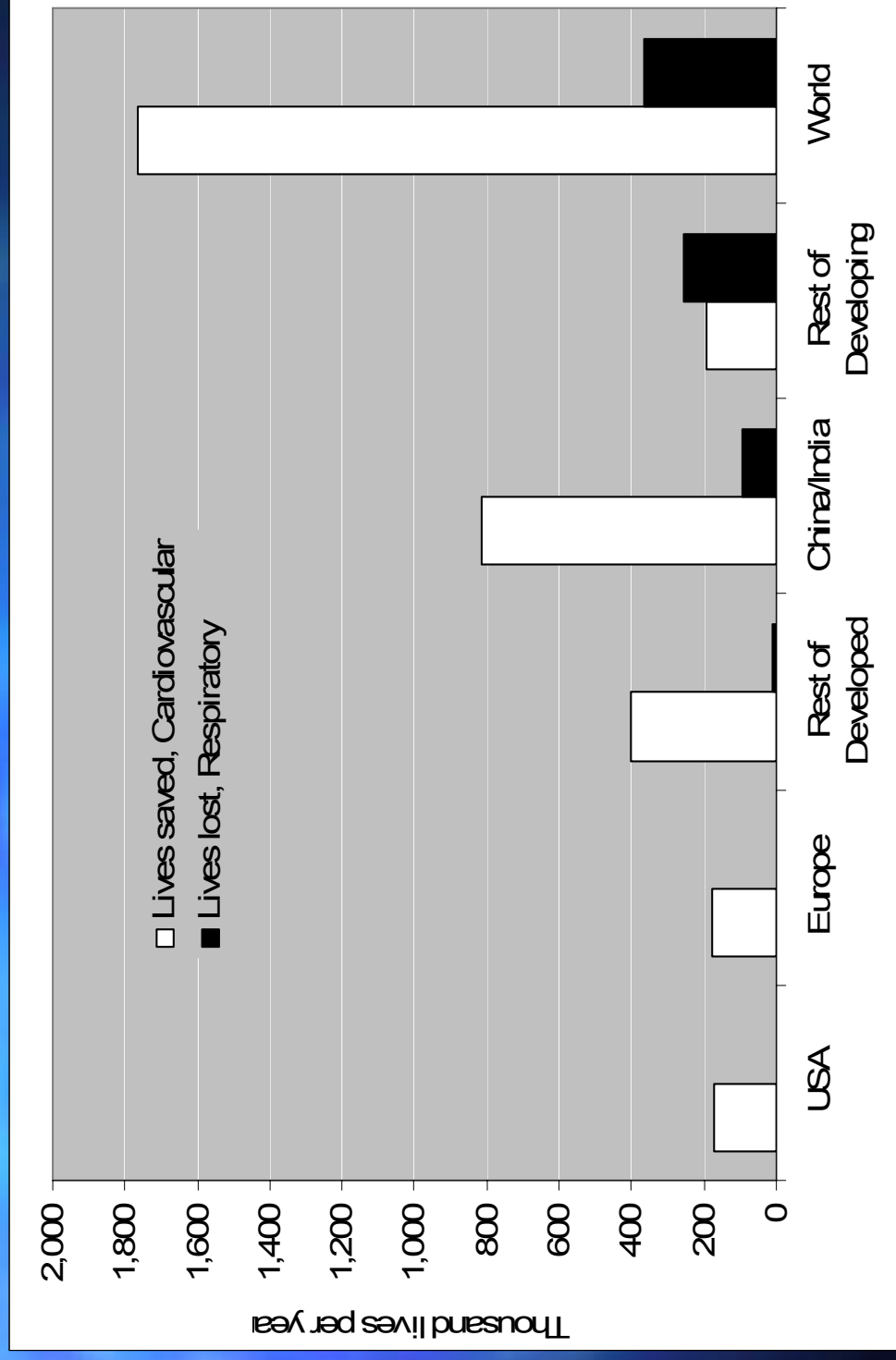
- Gore and many others tell us
  - Planetary emergency
    - “We have just ten years to avert a major catastrophe that could send our entire planet into a tail-spin of epic destruction involving extreme weather, floods, droughts, epidemics and killer heat waves beyond anything we have ever experienced.”
- Four central issues
  - Heat deaths
  - Sea level rise
  - Hurricanes
  - Malaria

# 1 Higher mortality with heat?

- Heat and cold deaths
  - In the UK
    - 2,000 more heat deaths by 2080
  - But fewer cold deaths
    - 20,000 fewer
  - Likewise in the US
    - 174,000 net fewer deaths by 2050

*Bosello, Roson, & Tol, 2006; Keatinge & Donaldson, 2004; Keatinge et al., 2000*

# Higher temperature, fewer deaths – also globally



*Bosello et al. 2006*



## 2 Sea level rise

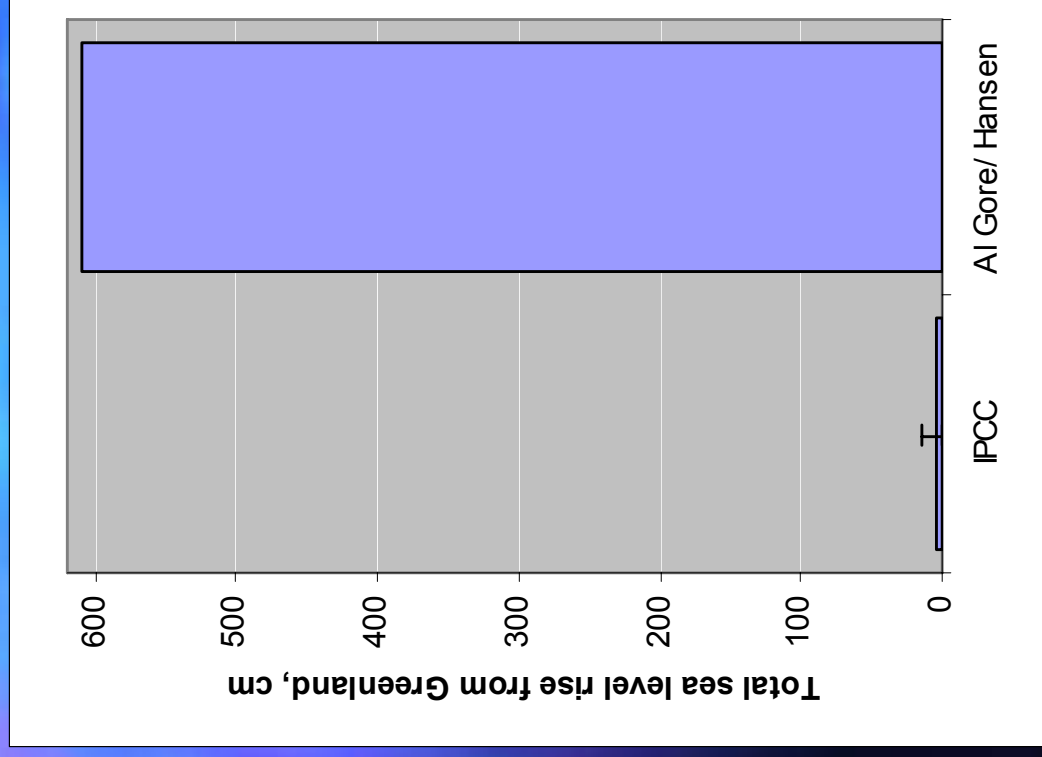
- Sea levels will rise
- But not a catastrophe
  - About 1 foot over the next 100 years
    - Not Al Gores' 20 feet
  - About 1 foot the last 150 years
    - Did we worry?

# Sea level rise

- Sea levels will rise
  - Mostly due to warmer water expanding
- But not a catastrophe
  - 30cm over the next 100 years
    - Not Al Gores' 7 meters
  - 30cm the last 150 years
    - Did we worry?
- Maldives lose 77% land (121% BNP)
  - Yes, if they don't act, but 0,00014% if they act efficiently (cost: 0,1% BNP)

# Al Gore: melt from Greenland

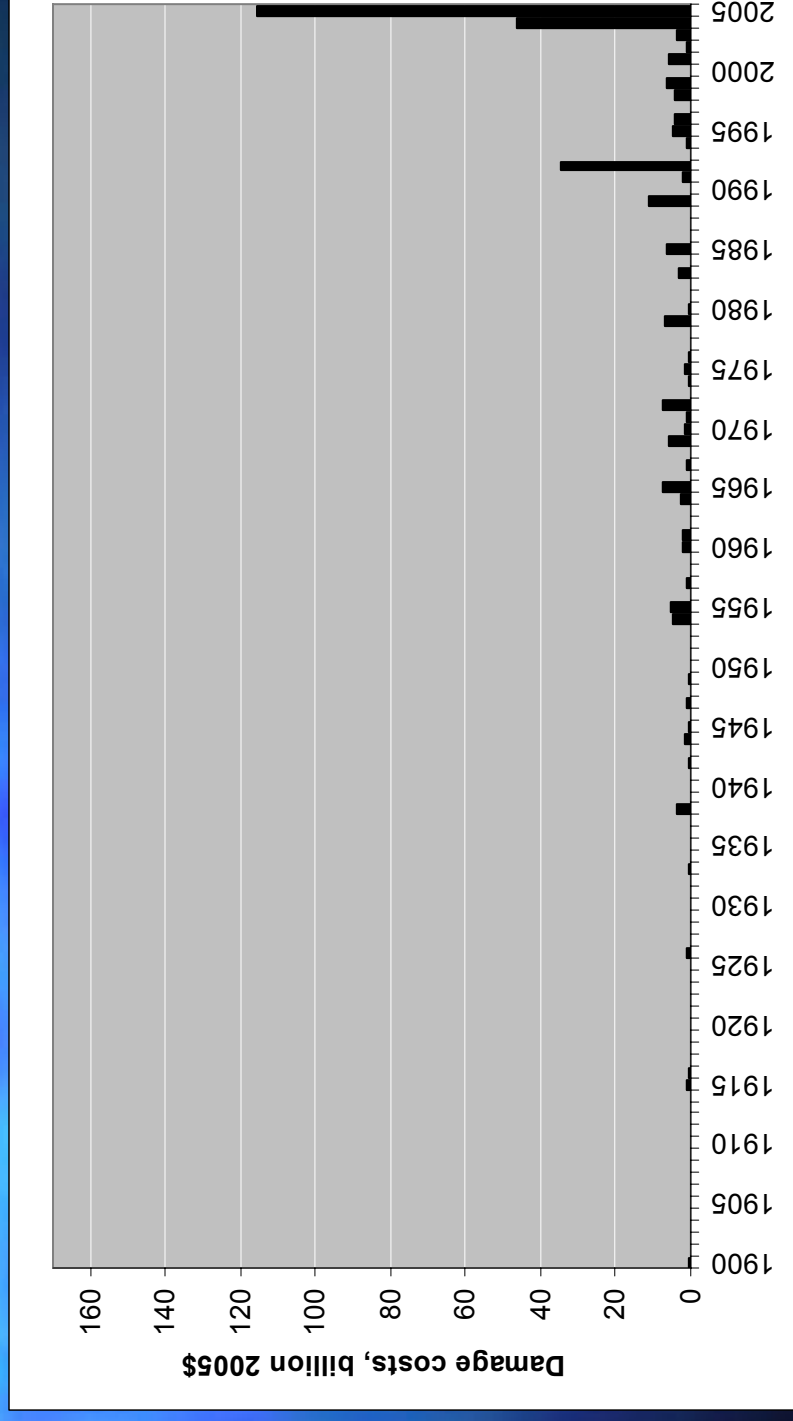
- Greenland till 2100
  - Gore predict 20 feet
  - IPCC predict 1.4 inch
    - This is 174 times exaggerated
    - Not helpful in a democratic debate
    - The impression of immediate inundation





# 3 Hurricanes: ever costlier in the US

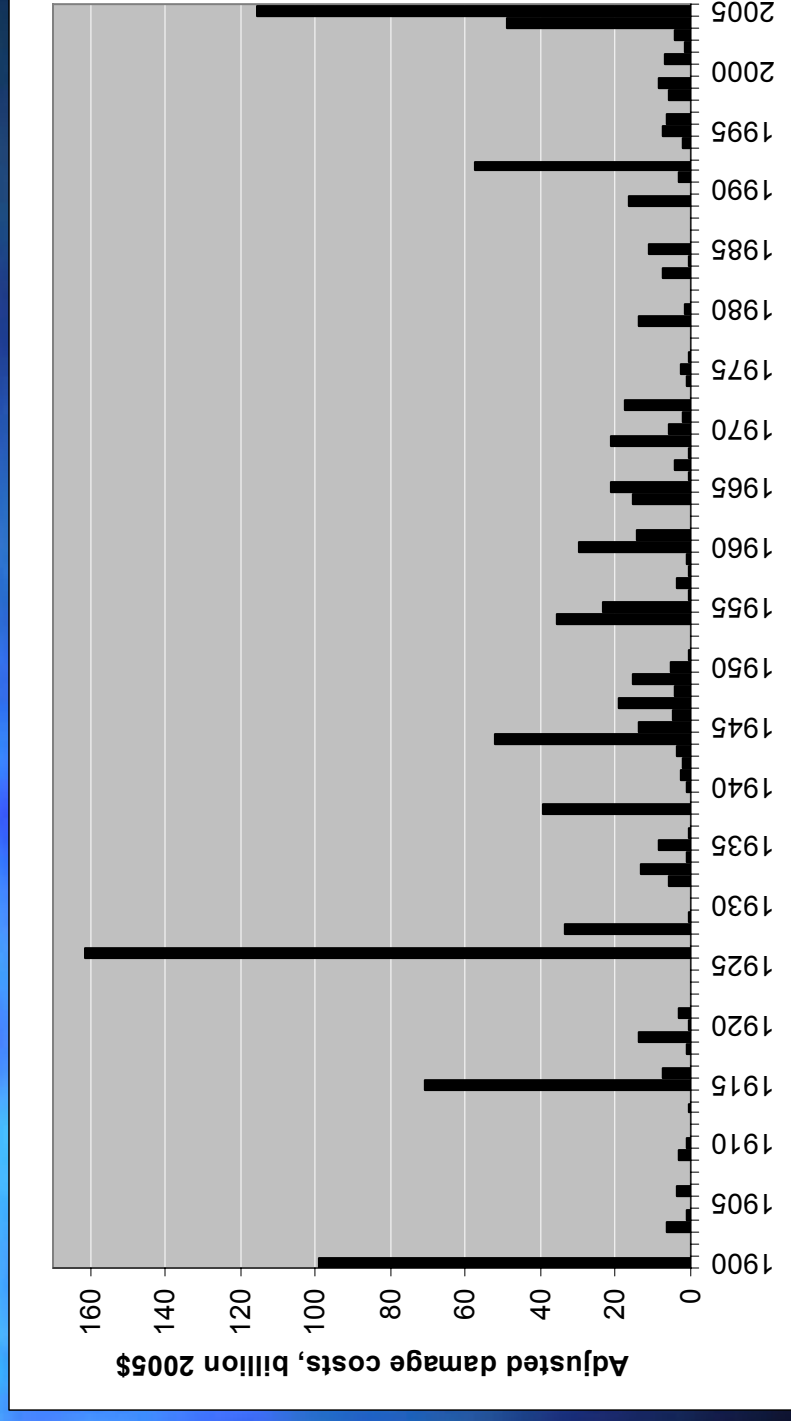
- Damage costs from hurricanes in the US



*Pielke et al. 2007*

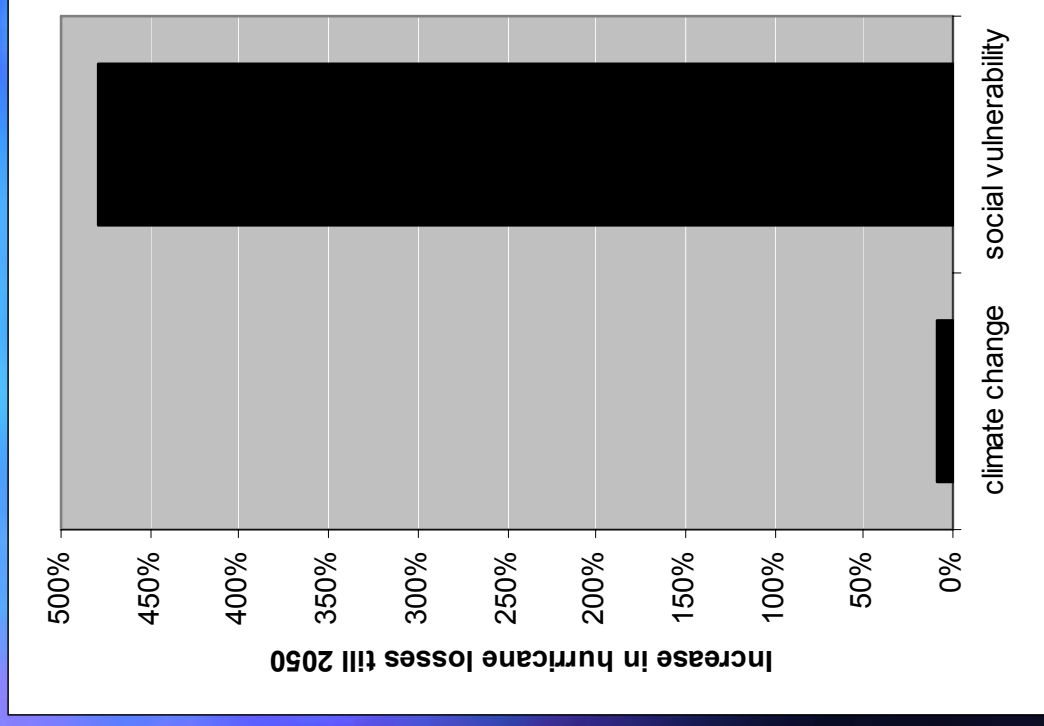
# More people with more goods in exposed areas

- Damage costs if all hurricanes had hit the US in 2007



*Pielke et al. 2007*

# Hurricanes: Fix climate or social vulnerability



- If we stop climate change
  - Prevent 10% damage increase
- If we end social vulnerability
  - Prevent 480% damage increase
- Which knob should we focus on?

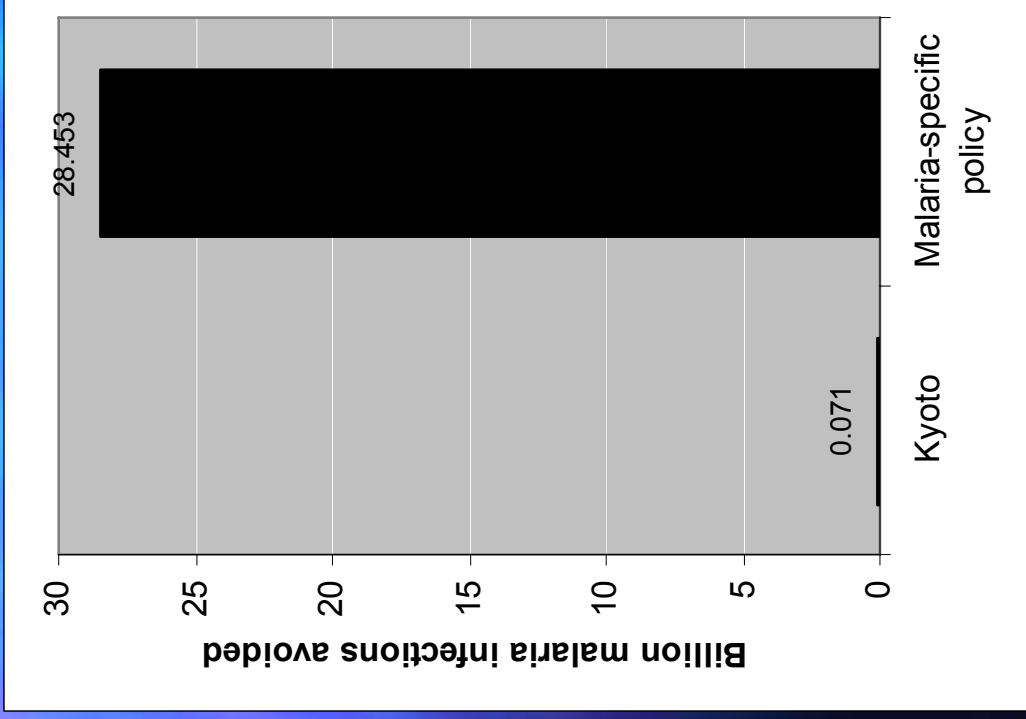
*Pielke 2005*

# 4 More malaria from heat?

- Malaria is weakly connected to heat
  - But much more dependent on wealth and treatment
  - Malaria endemic in Europe & US in little ice age
    - Even malaria in the Arctic circle
    - 20% malaria in Moscow in the 1940s
  - As economies strengthened, we dealt with malaria
    - Even as temperatures increased
  - Thus, with economic growth comes lower malaria
  - Is climate the right knob to turn?

# Which knob to tackle malaria?

- We can save 400 times more
- At less than 2% of the cost





# 5 Melting glaciers

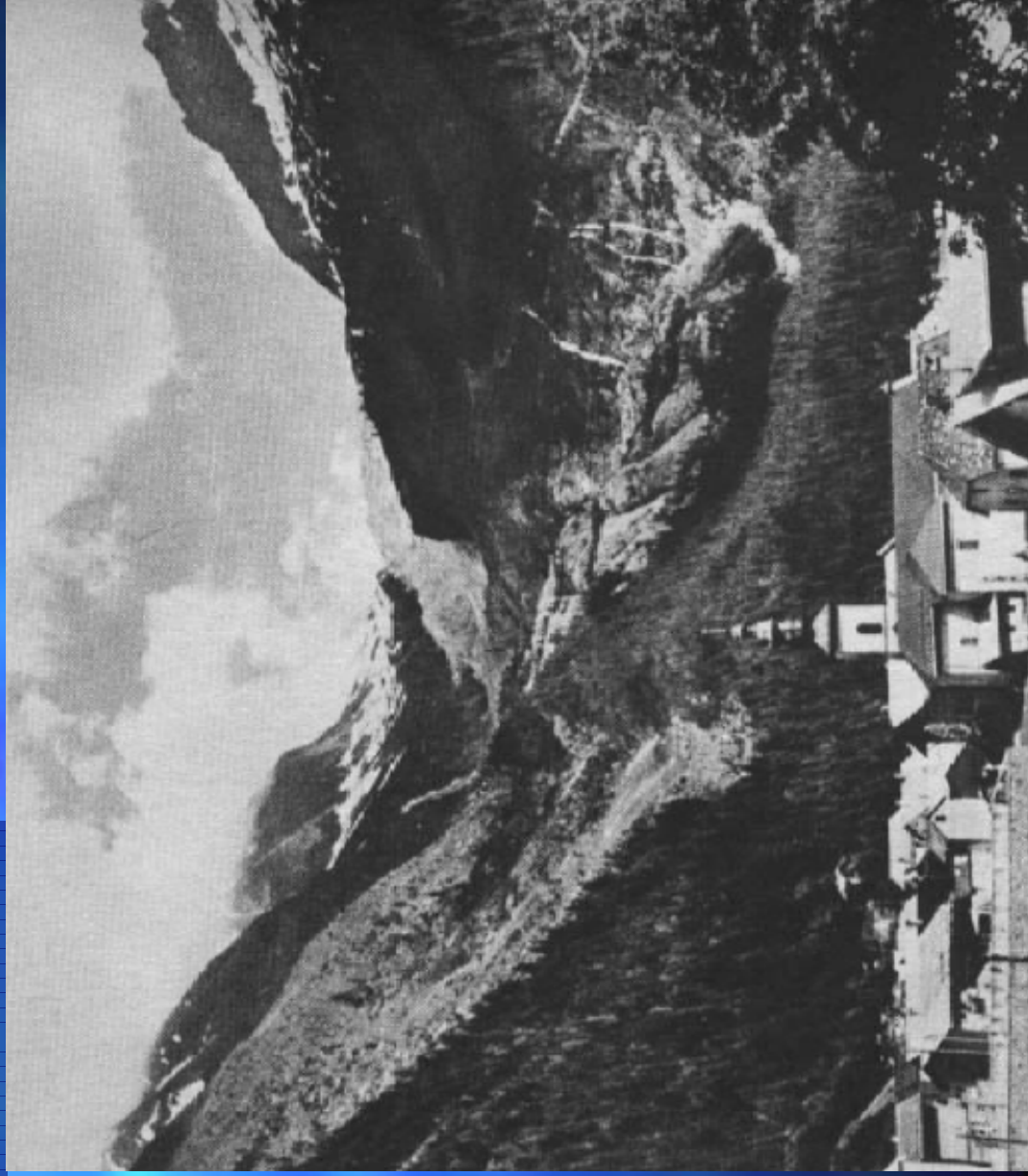
- Al Gore shows us melting glaciers
  - But not surprising
  - Maximal extent of glaciers since the last ice age was around 1750
- We are told we're loosing the last 10,000 years of stable climate
  - Wrong. IPCC tells us that glaciers were almost absent 9,000-6,000 years ago

# Kilimajaro melt

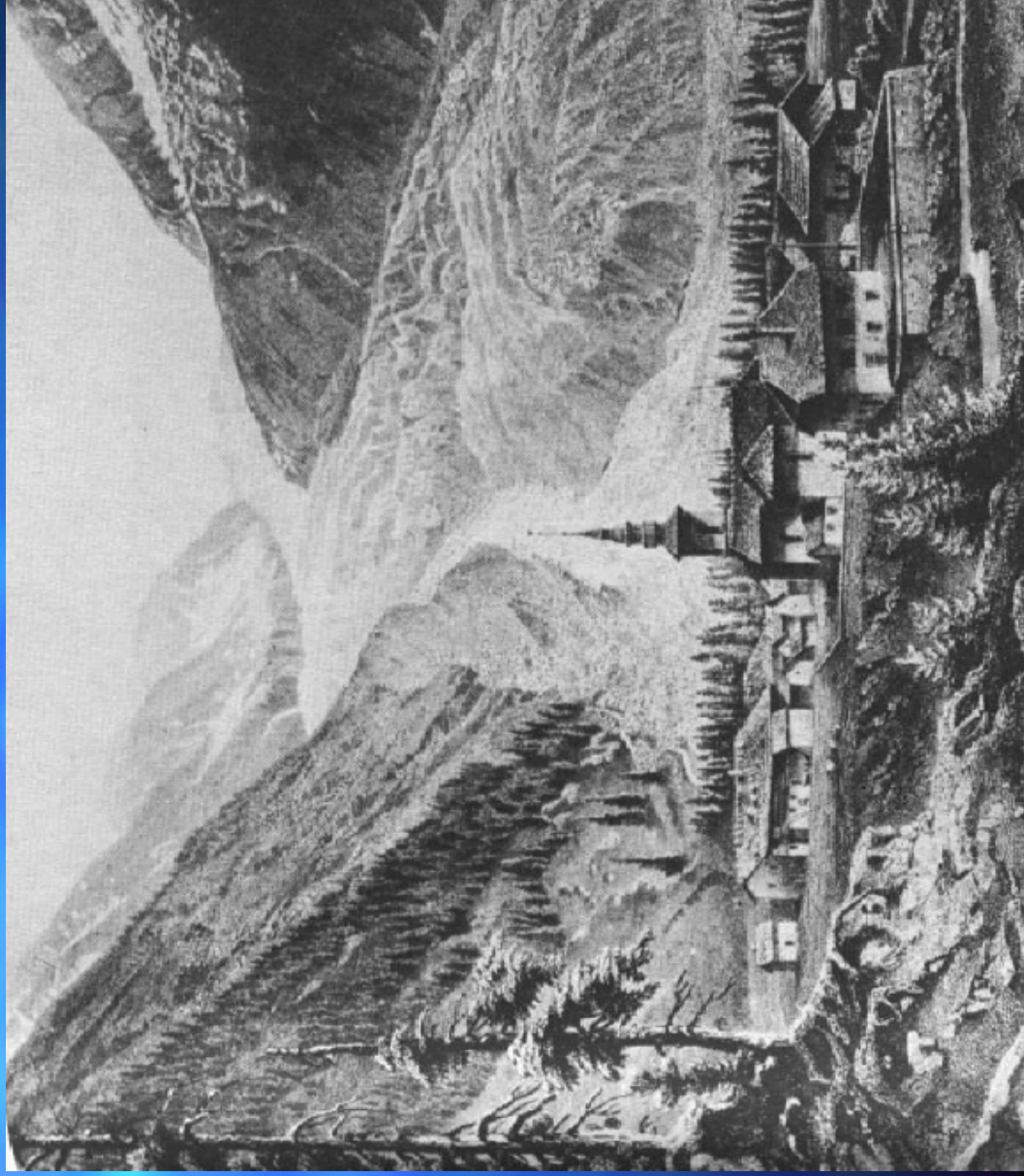
*Kaiser et al. 2004*



# Swiss Argentiere Glacier 1966



# Swiss Argentièriere Glacier 1850





# Media tends to over-worry

## "The Ice Age Cometh?" 1975

- "Threat of climatic changes"
- "Climate change: Chilling Possibilities"

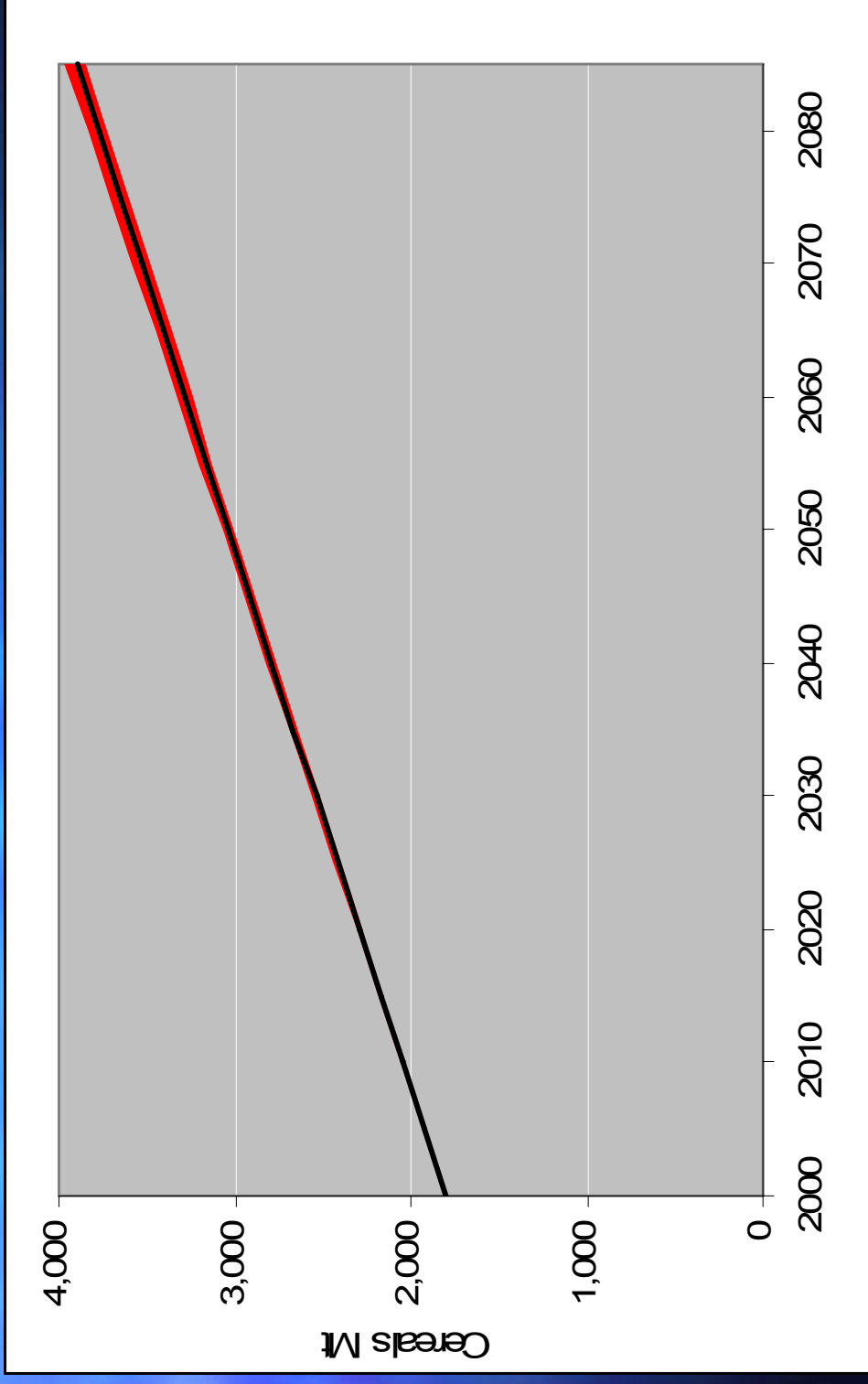
- The unusually beneficial climate of the past few decades may be degenerating, facing humanity with a new challenge to survival
- We may be approaching the end of a major interglacial cycle.
- This transition would involve only a small change of global temperature – 2 or 3 degrees – but the impact on civilization would be catastrophic.
- Scientists once thought the onset of an ice age would be very gradual... but recent studies ... indicate the transition can be rather sudden.



*Cover of Science News 1975*

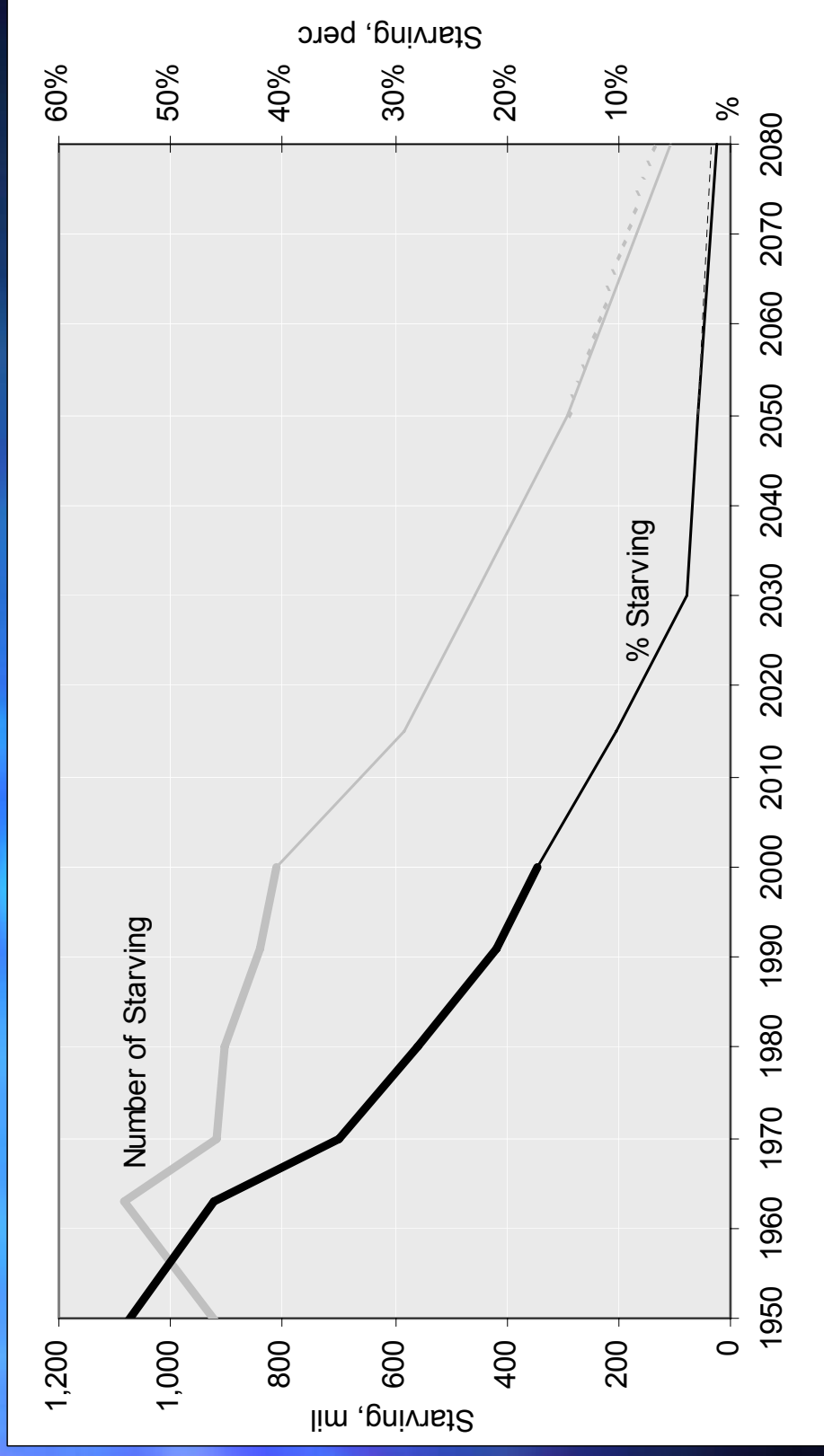
# 6 Consequences for agriculture

(production of cereals)



*Fischer et al. 2005*

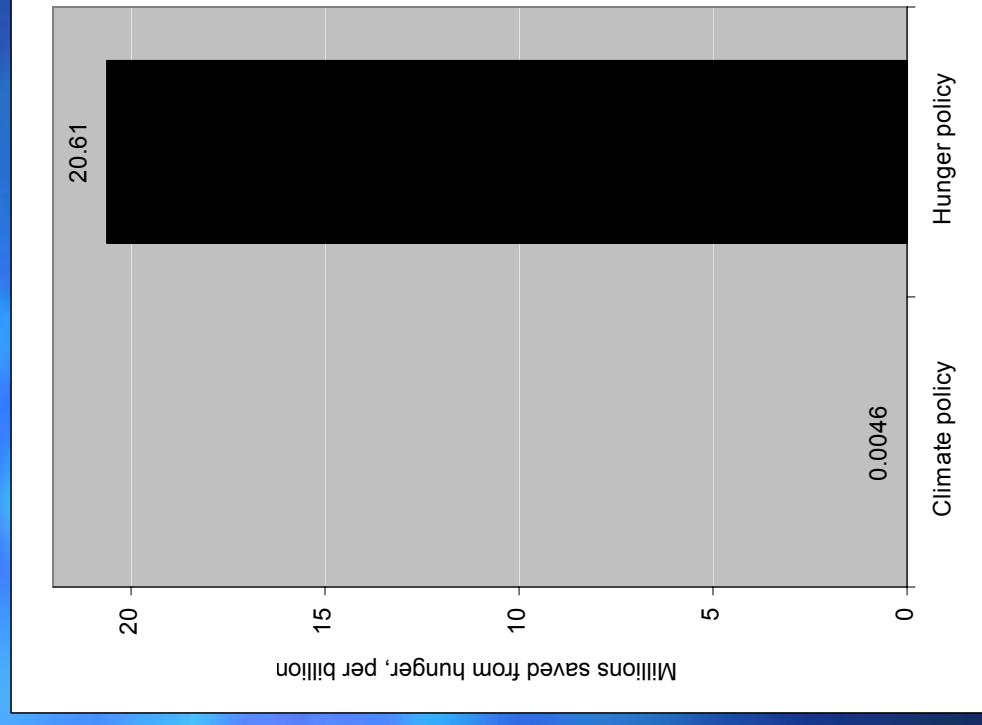
# Changes in hunger



Arnell 2004



# Again, which knob?

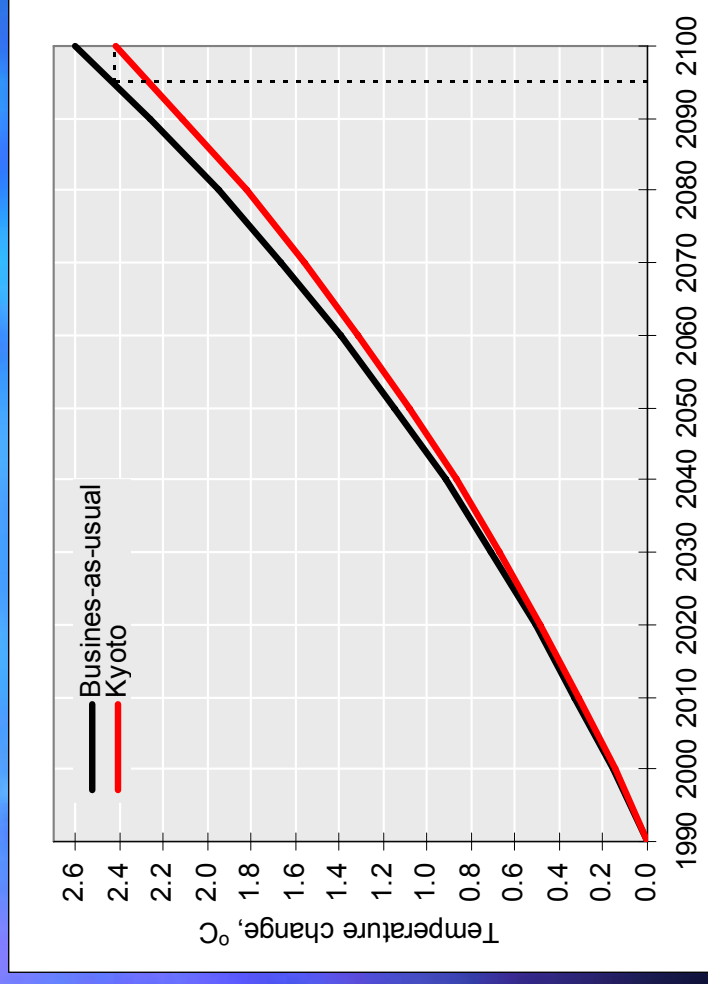


# 3

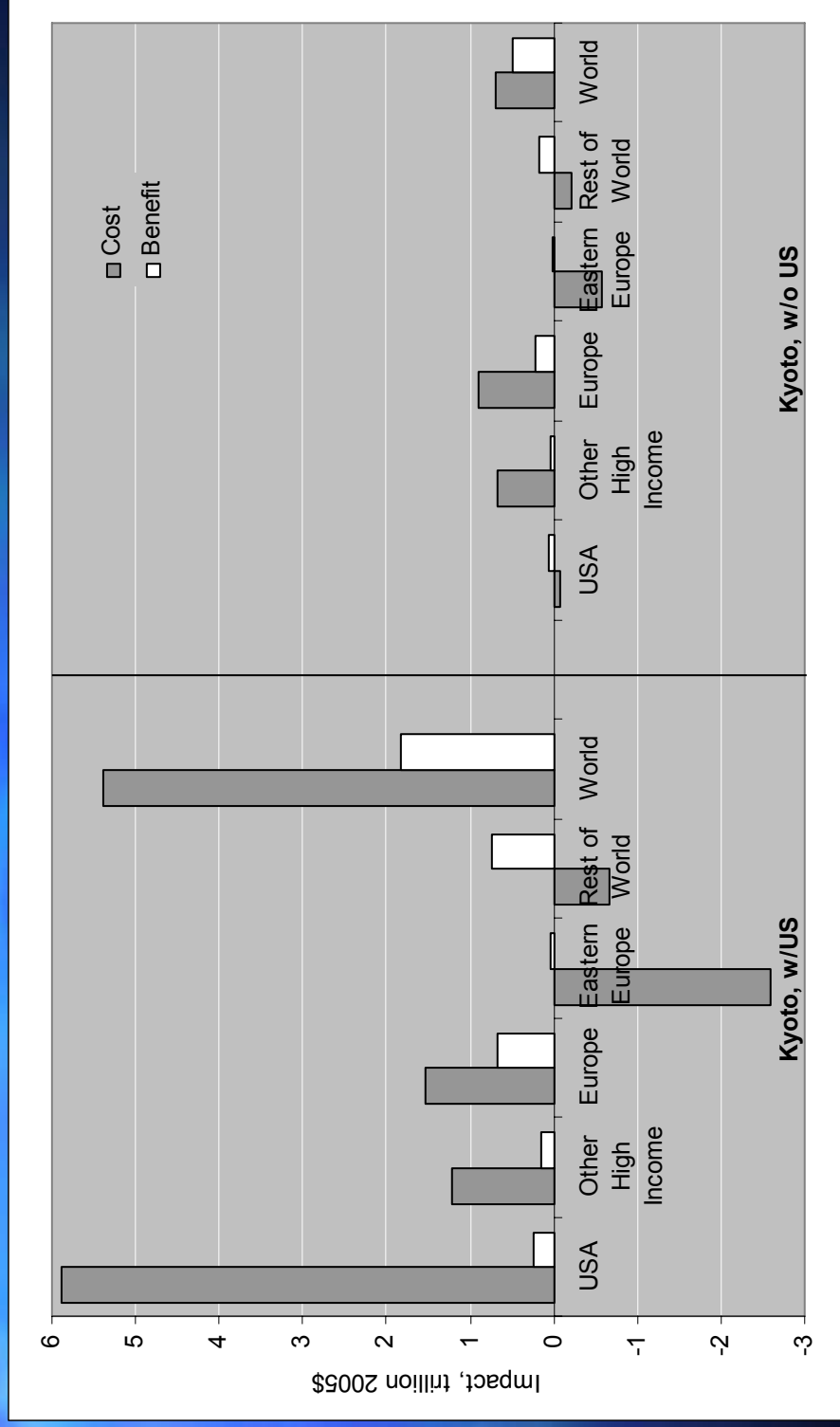
Smarter options needed:  
Kyoto or EU 20% high cost-no gain

# Kyoto: Postpone warming by 5 years

- Cost of Kyoto
  - \$180 billion per year



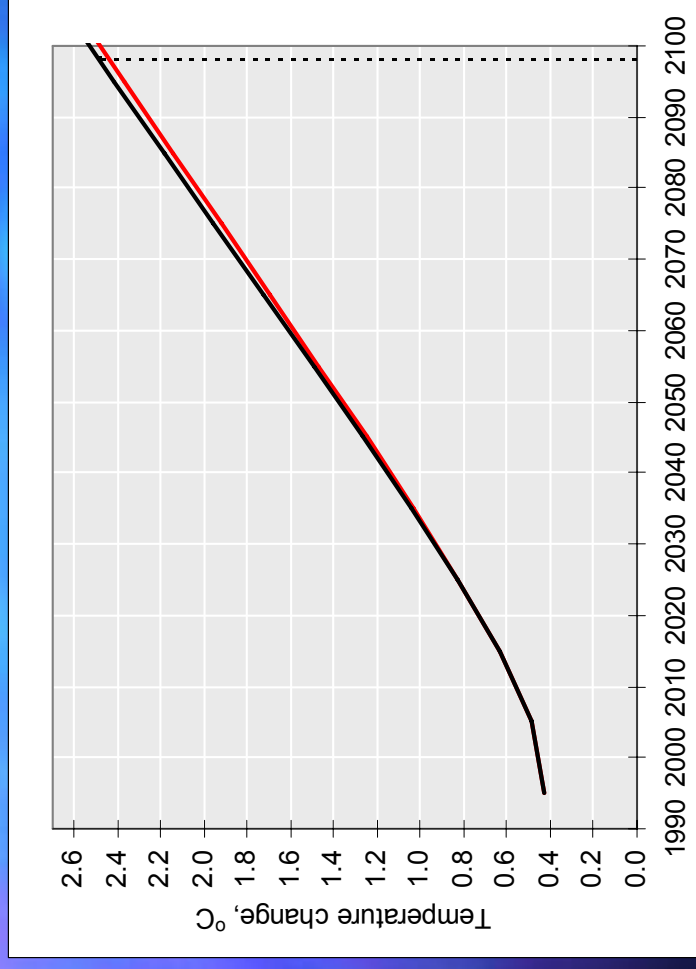
# Total cost/benefit of Kyoto



*Nordhaus 2006*

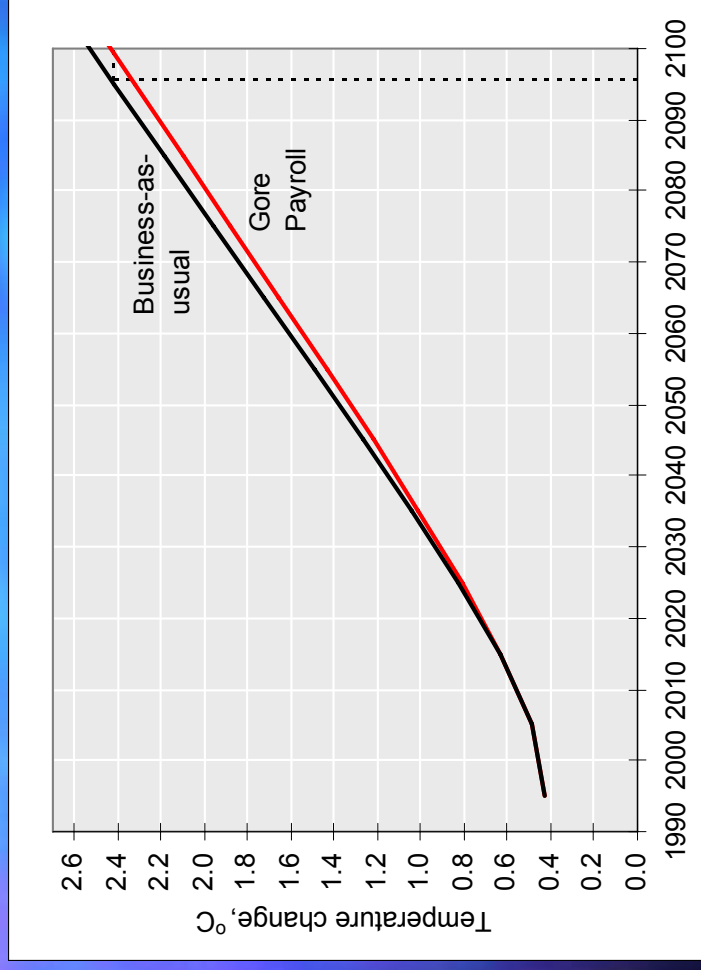
# EU's new 20% cut by 2020: Postpone warming by 2 years

- Cost
  - \$90 billion per year





# Gore solution: Postpone warming by 4.5 years

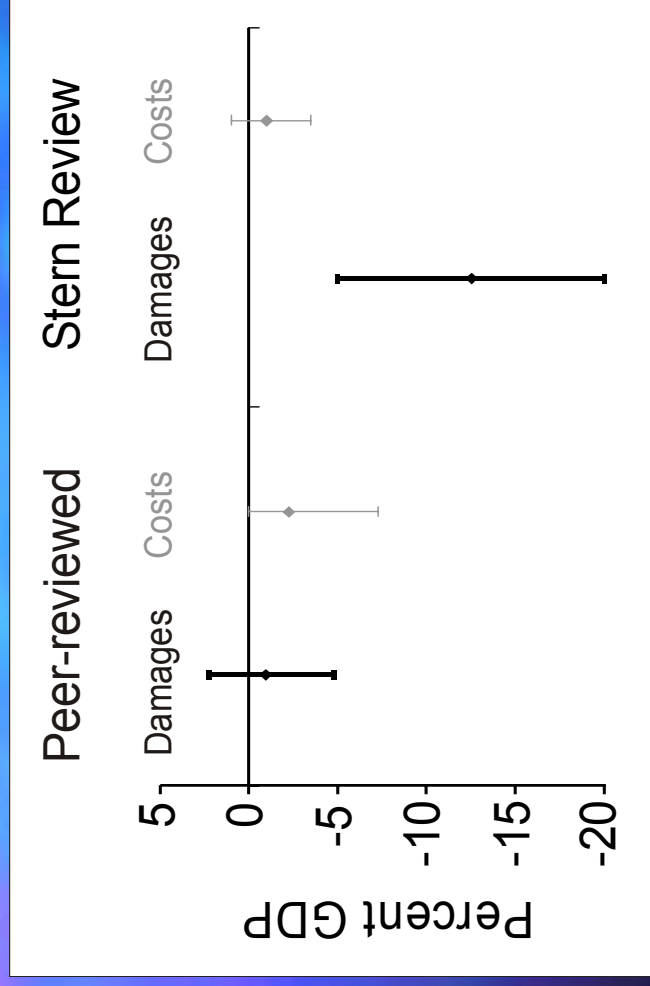


- Replace payroll tax
- Cost
  - \$160 billion per year
- Consequence
  - \$1.25 per gallon
  - Essentially, US do a Kyoto all by itself

*Nordhaus 2006*

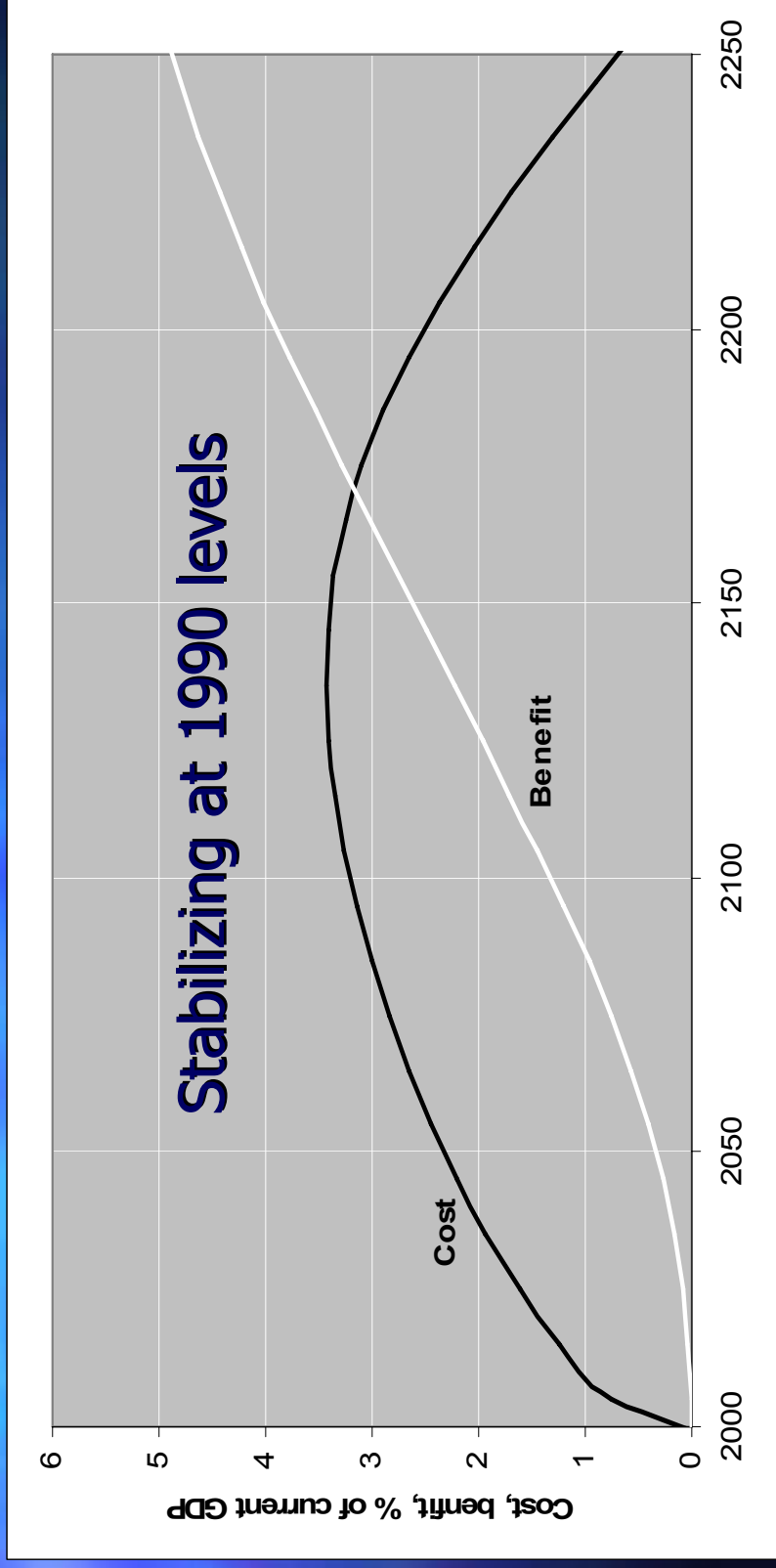
# All peer reviewed cost-benefit show little effort now

- Only Stern review shows otherwise
  - Easily end up making policies that do more harm than climate change



# Why?

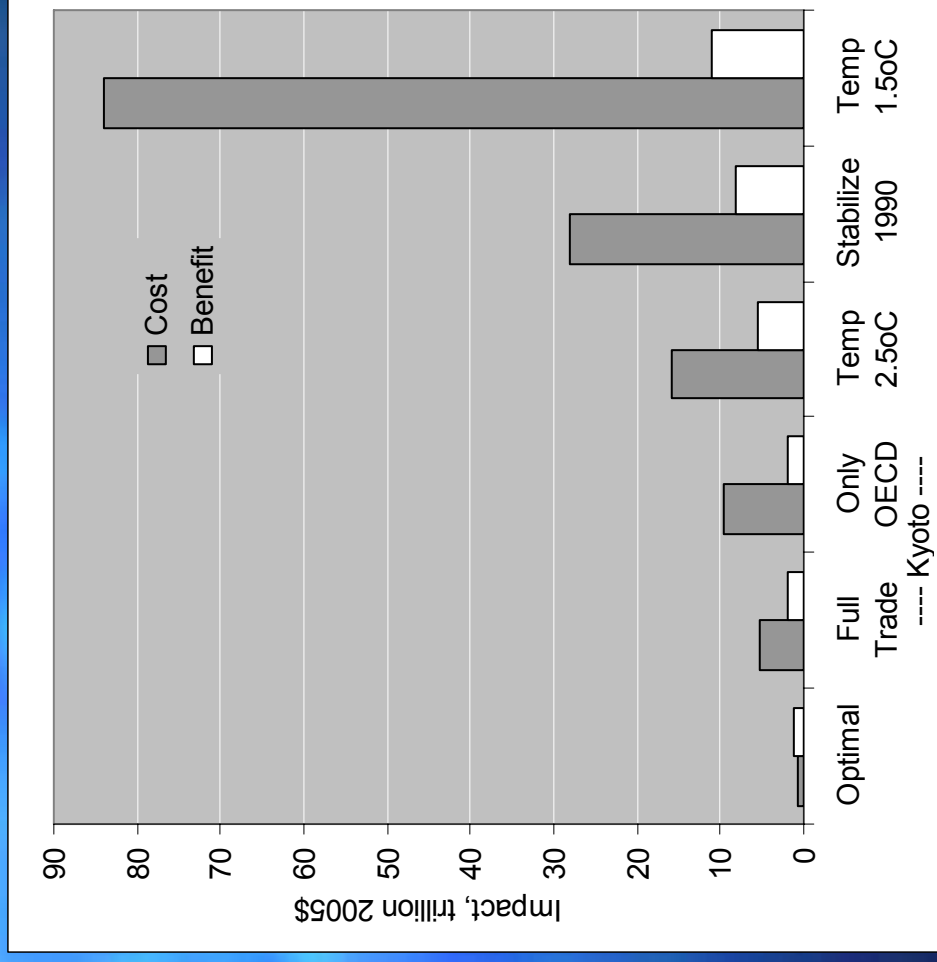
- Because cost is now, benefit *much* later



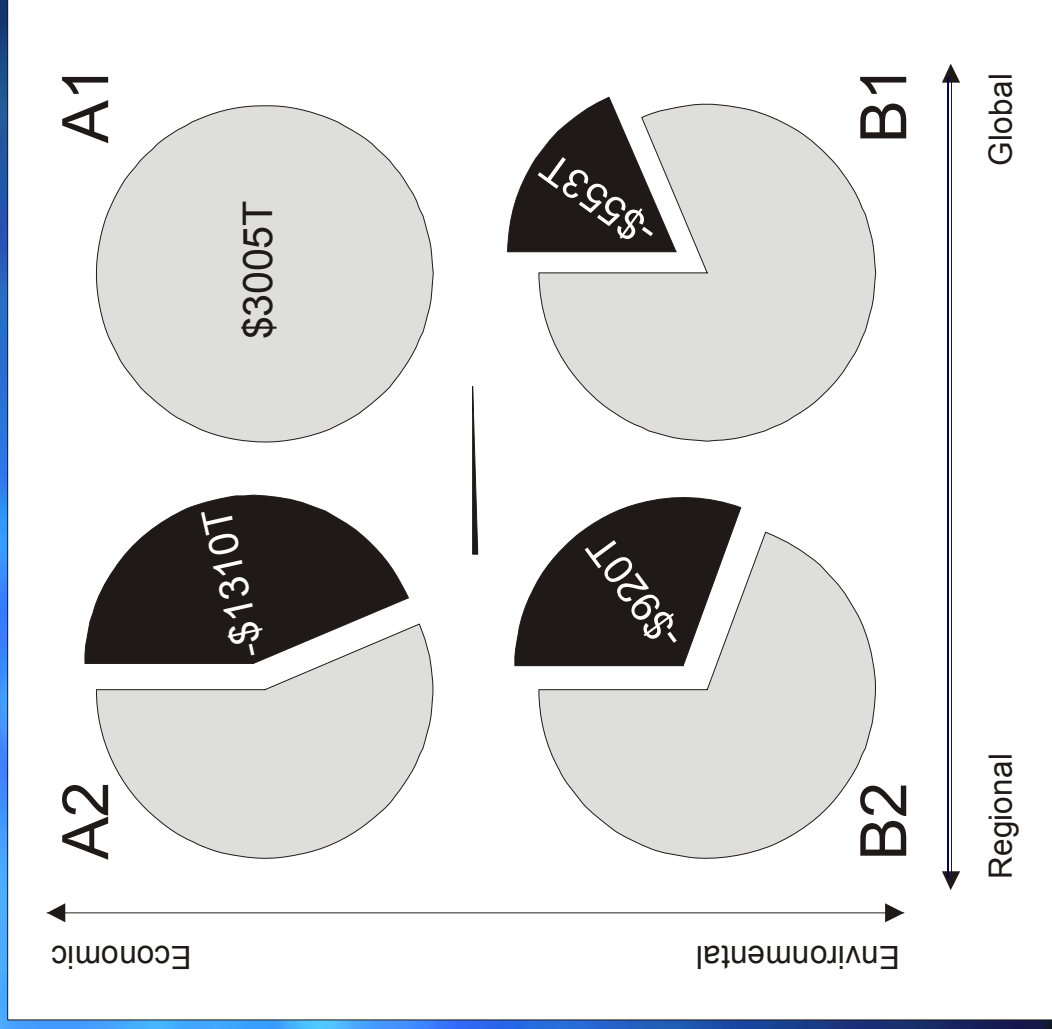
*Nordhaus 2006*

# Global warming overview

## *All Cost/Benefit: Do little*



# Global warming and other costs of the 21<sup>st</sup> century





# Smarter way forward

- Long-term problem, long-term solution
  - Invest 0.05% of GDP in RD&D of non-carbon emitting energy technologies
  - \$25 billion/year
  - Let each country focus on its own future
    - renewables, fission, fusion, conservation, carbon storage
  - Will solve global warming in the medium term

# 4

Many other problems where we can  
do much more good

# Gore: our generational mission

- How do we want to be remembered?
  - Spending \$180 billion/year doing virtually no good a hundred years from now? (Kyoto etc.)
- Compare this to
  - For \$75 billion/year the UN estimate we can solve all major basic problems
    - Clean drinking water
    - Sanitation
    - Basic healthcare
    - Primary education

# Copenhagen Consensus

Top economists: Most bang for the buck

Good per dollar

Very good investments	1	HIV/AIDS	\$40
	2	Micronutrients	\$30
	3	Free trade	\$20
	4	Malaria	\$15
	...		
	...		
Bad investments	16	Kyoto Protocol	\$0.25

*Copenhagen Consensus*



# Summary

- We are moving in the right direction
  - Many environmental indicators better
  - We need to focus on the right priorities
- Global warming is real & man-made
- Often wildly exaggerated
  - Harms our ability to make good judgment
- We need smart decisions
  - Not fast, expensive and useless cuts but
  - long-term, cost-effective investment in R&D
- Many other opportunities much better
  - Our real generational mission



